

# **APPENDIX E**

## **PROTOTYPE TRAINING GUIDE**

NOTE: This is a prototype product provided for illustration purposes only. This product is not intended to be used for actual dust control training. The content of this product was current at the time that the draft was created. However, subsequent changes in rules, regulations, and available data may have rendered portions of the text or graphics obsolete or inaccurate. If and when the training program recommended by this research project is implemented, updated training materials may be obtained from the program coordinator.

The draft Training Modules contained herein are structured as scripts to accompany slide presentations, prototypes of which were also developed as products of the research. The modules were not designed to be used without the accompanying slides.



# Dust Control Course Trainer's Guide



Prepared for  
Arizona Transportation Research Center



# **Dust Control Course Trainer's Guide**

**DRAFT**

**Prepared for**

The Arizona Department of Transportation

ADOT Project SPR-519

PM<sub>10</sub> Research for Developing Educational Tools and Outreach Programs

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## INTRODUCTION TO THE TRAINING AND CERTIFICATION PROGRAM

Blue Skies is a voluntary dust control training and certification program being offered to the construction industry in Arizona. The goal of the training course is to familiarize construction personnel with common dust control problems and solutions. The course is designed for anyone working in the construction field, although site superintendents, water truck and water pull drivers, and subcontractors are strongly encouraged to attend. In addition to lectures, the course includes class discussion and review of example case studies.

At the completion of the course, the attendee will have a basic understanding of why controlling construction dust is important, should be familiar with dust control regulations, and be able to identify and solve dust control problems at construction sites.

### Modular Lesson Plan

This basic dust control course is designed to be presented in a half-day format. Prior to beginning Module 1, the class should be shown the 10-minute video developed by the Maricopa County Environmental Services Department, entitled “Effective Dust Control and Overview of Rule 310.” The course can be tailored to the needs of specific groups or jurisdictions by eliminating modules or part of modules. The six training modules are:

**Module 1 - Background** will cover the reasons that dust control is needed, and the causes of PM<sub>10</sub>. Both natural and man-made sources of fugitive dust will be identified and actions that have already been taken to reduce PM<sub>10</sub> emissions will be explained.

**Module 2 - Construction Dust Control Requirements** will explore in detail the construction dust control requirements in effect for the jurisdiction in which the course is being presented. Dust control measures for construction-related activities will be explained.

**Module 3 - Enforcement of Dust Control at Construction Sites** will cover jurisdictional enforcement, including the characteristics of the dust control enforcement program, inspection criteria, enforcement procedures, and penalties for violations, as appropriate for the jurisdiction in which the course is being presented.

**Module 4 - Strategies to Assist Construction Activities in Controlling Dust** will examine dust control strategies, including project design and site planning. A case study of a construction project will be included.

**Module 5 – Visible Emissions Evaluation at Construction Sites** will describe the techniques used to identify the opacity levels of dust generated by construction activities. The script and slides for this module are being developed by the Arizona Department of Environmental Quality and will be added to this guide when completed.

**Module 6 - Information Resources and Reinforcements** will discuss additional information that supplements and

reinforces the material covered in class. Participants will be given a final exam that can be used for certification purposes.

### Voluntary Certification Program

The goal of the voluntary certification program is to train construction personnel and supervisors to identify dust problems and proactively implement measures to control dust at construction sites. This program is designed for construction industry management and job supervisory personnel. Upon certification, each individual will receive a Dust Control Specialist or Instructor certificate.

Two levels of certification are offered:

**Certified Dust Control Specialist** - An individual who completes Dust Control Training and passes an exam covering the subject matter presented in the course with a grade of 75 percent or better, may receive designation as a Certified Dust Control Specialist. To maintain certification, a Specialist must take the Dust Control Training and pass the final exam once every two years.

**Certified Dust Control Instructor** – A Certified Dust Control Specialist who has successfully completed Visible Emissions Evaluation Training and has co-taught a Dust Control Training course under the supervision of another Certified Instructor, may be designated as a Certified Dust Control Instructor. To maintain certification, an Instructor must receive Smoke School certification every six months and pass the final exam for Dust Control Training (with a score of 75 percent or better) at least once a year.

Visible Emissions Evaluation Training is offered by the Arizona Department of Environmental Quality twice a year in various parts of the state. This training is a two-day event comprising a classroom session in the morning of the first day, followed by a testing session lasting the remainder of the event. During the testing session, participants evaluate sets of black and white smoke readings to learn to recognize levels of opacity that exceed the standards.

Additional information on the availability of training classes and requirements for certification may be obtained from the Blue Skies Coordinator at (602) 712-7487.

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## The Module Scripts

This *Trainer's Guide* contains example scripts for each of the modules, keyed to the slides in the accompanying PowerPoint™ files. In a few cases, script sections are numbered “2-10 A”, “2-10 B”, and so on. This numbering convention is used when the accompanying

slide—such as slide No. 2-10—makes use of the PowerPoint™ animation feature. The scripts are intended as examples only and provide the minimum supporting information that should be conveyed to the class at the time each slide is shown.

## MODULE 1 - BACKGROUND

Slide No.	Notes
1-1	<b>Module 1 - Why Do We Need to Control Dust?</b>
1-2	<p><b>Health Effects of PM</b> - When inhaled, coarse particles (between 2.5 and 10 microns) are deposited in the upper respiratory tract. The smaller particles (less than 2.5 microns) can be deposited lower, in the pulmonary tissues, and invade the alveoli of the lungs. These more invasive particles can bond with toxins and other airborne chemicals before they are inhaled. It is difficult for the human body to eject the fine particles, once they are deposited in the lower lungs.</p> <p>In the lungs, PM decreases breathing efficiency and alters the body's natural defense systems. Highly sensitive groups include the elderly, asthmatics and children. Epidemiological studies have shown causal relationships between high particulate concentrations and increased mortality and morbidity.</p>
1-3	<p><b>Medical Data for PM<sub>10</sub></b> - Medical studies have shown that higher PM<sub>10</sub> concentrations can be linked to an increased number of premature deaths, asthma attacks, hospital admissions, and emergency room visits, and an overall decrease in lung functioning efficiency.</p> <p>In 1995, the Arizona Comparative Environmental Risk Project ranked particulate pollution as one of the highest environmental risks in the state. This conclusion was based on increased hospital admissions for respiratory problems, asthma, and lower and upper respiratory symptoms, due to high annual PM<sub>10</sub> concentrations. In the same study, premature deaths due to PM<sub>10</sub> were estimated to approach 700 per year in Maricopa County and 1,000 per year statewide.</p>
1-4	<p><b>One particularly dangerous form of particulates found on construction sites is crystalline silica dust.</b> Crystalline silica is found in common materials such as concrete, masonry, sand, quartz and granite rock. Inhaling dust produced from these materials can cause permanent lung damage, called silicosis. Silicosis is responsible for about 300 deaths per year. OSHA and the Arizona Division of Occupational Safety and Health are so concerned about the non-reversible health effects of silicosis that they are providing local training on how to control silica dust at construction sites.</p>
1-5	<p><b>What is Particulate Matter</b> – Tiny solid particles or liquid droplets that remain suspended in the air, including soil dust, pollens, molds, ashes, soot and aerosols. PM<sub>10</sub> is particulate matter smaller than 10 microns in diameter and PM<sub>2.5</sub> is smaller than 2.5 microns. (For comparison, a human hair is approximately 70 microns.)</p>
1-6	<p><b>PM<sub>10</sub> is predominately geologic materials such as rock and soil particles; the soil particles are typically silt (4-10 microns in diameter), and clay (larger than 4 microns in diameter)</b> In urban areas, PM<sub>2.5</sub> particles generally represent between 25 and 30 percent of the PM<sub>10</sub> based on volume. PM<sub>2.5</sub> is usually emitted by combustion sources and formed by gases; a smaller fraction is made up of clay soil particles.</p>
1-7	<p><b>Soil Particle Sizes</b> - Relative soil particle sizes are shown here. Sand particles typically exceed ten microns in diameter and, therefore, are too big to be PM<sub>10</sub>. These particles are so large that they return to the ground quickly after being</p>

Slide No.	Notes
1-7 (continued)	airborne. Silt tends to be the predominant soil type of particles that are smaller than 10 microns (PM <sub>10</sub> ) but larger than 2.5 microns (PM <sub>2.5</sub> ). The smaller clay particles are usually the soil type found in PM <sub>2.5</sub> .
1-8	<b>National Ambient Air Quality Standards for PM<sub>10</sub> and PM<sub>2.5</sub></b> – There are two federal standards for PM <sub>10</sub> and PM <sub>2.5</sub> : an annual and a 24-hour standard. Maricopa County does not violate either of the PM <sub>2.5</sub> standards, but violates both the annual and daily standards for PM <sub>10</sub> .
1-9	<b>How PM is Monitored</b> – Particulate concentrations are usually measured by pulling ambient air through a filter for twenty-four hours every sixth day, weighing the filter before and after, and measuring the volume of air sampled. Regular checks of the samplers and laboratory procedures are conducted using statistical tests required by EPA. In 2000, there were seven PM <sub>2.5</sub> monitors and nineteen PM <sub>10</sub> monitors operating in Maricopa County.
1-10	<b>Central Phoenix Air Monitoring Site</b> - This site has been measuring air pollution for over three decades. Equipment at this site measures PM <sub>10</sub> continuously so that episodes (back-to-back high concentration days) can be predicted and counter-measures can be implemented in a timely manner.
1-11	<b>Trends in PM Concentrations</b> – No monitor in Maricopa County has recorded a violation of the PM <sub>2.5</sub> standards and this trend is expected to continue in the future, due to increasingly stringent federal controls on tailpipe emissions from new cars and trucks. However, for PM <sub>10</sub> , the number of monitoring sites exceeding the annual standard and number of days exceeding the 24-hour standard have not shown a consistent downward trend.
1-12	<b>PM<sub>10</sub> Trends</b> - This chart shows that 1998 and 2001 were relatively good years for PM <sub>10</sub> in the Valley, but 1999 and 2000 were not.
1-13	<b>PM<sub>10</sub> Trends</b> - This graph indicates that the daily standard was exceeded on six days during 2001.
1-14	<b>PM<sub>10</sub> Monitoring Sites</b> - The monitoring sites that violated the 24-Hour PM <sub>10</sub> standard in 2000 are highlighted in yellow. With the exception of Maryvale (site #6), all of these sites also violated the annual PM <sub>10</sub> standard. They are clustered generally in South and West Phoenix, with the exception of the Chandler site.
1-15	<b>Quality of Life impacts of PM</b> – In addition to the health impacts, the smallest particulates (PM <sub>2.5</sub> ) are a constituent of the “brown cloud” that hangs over the Valley and obscures our blue skies on many mornings of the year. Scientific measurements by the Arizona Department of Environmental Quality indicate that visibility has not improved in the Phoenix metro area since 1994. PM <sub>2.5</sub> also contributes to the regional haze that reduces visibility at wilderness areas, parks, and other pristine areas located downwind of Maricopa County. On a more localized level, particulates from construction sites, vacant lots and fields, blowing across public or private roads can reduce visibility and increase the risk of traffic accidents. As a secondary impact, high levels of dust are also responsible for soiling clothes, vehicles, buildings, and other public and personal property and the resultant cleaning and repair costs.
1-16	<b>What Causes Particulate Matter?</b> Particulates are emitted into the air by both natural events and human activities.

Slide No.	Notes
1-16 (continued)	<p>Natural Sources - Winds sweeping over the natural desert around us contribute some of the airborne particulates, although not as much as you might think. The vegetation in the desert and the crust that forms after rains tends to put a natural “lid” on fugitive dust. In addition, sustained high winds exceeding 15 mph only occur on a few days each year. PM measurements taken at the relatively pristine Organ Pipe Cactus National Monument in southeastern Arizona indicate that natural conditions represent about 20% of the standards. That is, about 10 <math>\mu\text{g}/\text{m}^3</math> of the 50 <math>\text{ug}/\text{m}^3</math> annual standard for <math>\text{PM}_{10}</math> is prevalent in the atmosphere as a result of natural desert terrain. <math>\text{PM}_{10}</math> emitted by natural sources (i.e. dust devils, pollen from plants) is generally higher in an urban environment, usually in the range of 30-40 percent of the standard. The remaining concentrations can be attributed to human activities that have disturbed the soil or re-suspended the dust back into the air.</p> <p>Human Sources – People are responsible for most of the particulates present in the air that we breathe; in urban areas, humans contribute at least 60 percent of the <math>\text{PM}_{10}</math> air pollution problem.</p>
1-17	<p><b>Dust Storm Development</b> - This slide shows time-series photos of a dust storm developing over Phoenix. Dust storms can contribute to violations of the 24-hour <math>\text{PM}_{10}</math> standard, but do not have a significant influence on violations of the annual <math>\text{PM}_{10}</math> standard, because they do not occur very often.</p>
1-18	<p><b>Organ Pipe Cactus National Monument</b> - Natural desert conditions, such as those at Organ Pipe, produce <math>\text{PM}_{10}</math> levels that are about 20% of the national ambient air quality standards.</p>
1-19	<p><b>Sources of <math>\text{PM}_{2.5}</math></b> - Engine exhaust from on-road vehicles and off-road equipment emits a large proportion of the smallest particles (<math>\text{PM}_{2.5}</math>). About one-half of the <math>\text{PM}_{2.5}</math> is emitted in gasoline exhaust; another 15% comes from diesel exhaust. Emissions from older, poorly tuned vehicles and engines starting up in the colder fall and winter mornings are the major sources of <math>\text{PM}_{2.5}</math> in Maricopa County.</p>
1-20	<p><b>Sources of <math>\text{PM}_{10}</math></b>- The major sources of the slightly larger, although still invisible, <math>\text{PM}_{10}</math> particles in the Valley are construction and earthmoving operations, re-entrainment of fugitive dust by vehicles driving on paved roads (large trucks, in particular, can create a sizable “wake”), vehicles driving on unpaved roads (especially at high speeds), agricultural activities, and vacant lots. Winds greater than 15 mph can whip-up the human-disturbed dust and cause exceedances of the 24-hour <math>\text{PM}_{10}</math> standard. Activities that cause persistently high <math>\text{PM}_{10}</math> in the same location can cause violations of the annual <math>\text{PM}_{10}</math> standard.</p>
1-21	<p><b>Sources of <math>\text{PM}_{10}</math></b>- According to the EPA-approved Serious Area <math>\text{PM}_{10}</math> Plan for Maricopa County, construction and earthmoving operations contribute the largest share of the annual <math>\text{PM}_{10}</math> emissions in the Maricopa County nonattainment area (38%), followed by contributions from paved roads (18%), agriculture (14%), and unpaved roads (13%). Other minor sources of <math>\text{PM}_{10}</math> include vacant disturbed land, residential woodburning, and industrial operations.</p>
1-22	<p><b>Sources of <math>\text{PM}_{10}</math></b> - In Maricopa County, monitors located near an elevated freeway (Greenwood), industrial sources and unpaved haul roads (Salt River and Durango), and agricultural fields (Higley) have repeatedly exceeded the annual <math>\text{PM}_{10}</math> standard.</p>

Slide No.	Notes
1-23	<b>Some Sources of PM<sub>10</sub></b> - Agricultural tilling and vehicles on freeways can contribute to high PM <sub>10</sub> concentrations.
1-24	<b>Natural Conditions Contributing to PM<sub>10</sub></b> – Years in which the annual rainfall is lower than average typically record higher annual levels of PM <sub>10</sub> . However, extremely wet years are not always associated with the lowest annual PM <sub>10</sub> concentrations, because more mud is tracked onto pavement, dried in the sun, and subsequently re-entrained by moving vehicles. High winds are a more reliable predictor of high concentrations of daily PM <sub>10</sub> . For example, on August 22, 2000, six monitors located throughout the Valley exceeded the standard, due to wind gusts in excess of 25 mph. Other exceedances of the 24-hour standard during 2000 occurred during the months of January, June, July, September, and November. These high PM <sub>10</sub> readings were measured at seven different monitors on days that were not windy. High levels of PM <sub>10</sub> can occur on any day of the year and at any location.
1-25	<b>Natural Conditions Contributing to PM<sub>10</sub></b> - Another natural condition contributing to PM <sub>10</sub> is the type of soil that is being turned into dust by construction, earthmoving, or agricultural activities. Sandy soils create heavier particles that, when suspended in the air, are more quickly re-deposited on the ground. Soils that are predominantly clay, when disturbed, create much smaller particles that are more likely to stay suspended in the air as PM <sub>10</sub> .
1-26	<b>PM<sub>10</sub> Soils Map</b> - The Natural Resources Conservation Service and the Maricopa Association of Governments have created a map that shows the general location of soils in the Valley that are most likely to produce PM <sub>10</sub> , if disturbed by human activities. The dark red on this map indicates the areas in the PM <sub>10</sub> nonattainment area where clay soils predominate. As we have learned earlier, these are the most likely to produce PM <sub>10</sub> when disturbed by human activities such as motor vehicle operation, construction, or agriculture. This soils map may be downloaded from the Maricopa County Environmental Services Department website.
1-27	<b>What Happens If We Don't Meet the PM Standards?</b> - In addition to setting standards, EPA is responsible for enforcing requirements of the Clean Air Act. According to the Clean Air Act, areas that have not attained the national ambient air quality standards are designated as nonattainment areas. EPA has the authority to impose penalties on industries and stop federal highway funding if nonattainment areas do not meet the air quality standards or submit timely, approvable plans. In addition, EPA can impose a Federal Implementation Plan to solve the local problem.
1-28	<b>PM<sub>10</sub> Nonattainment Area</b> - This 3,000 square mile area represents the Maricopa County PM <sub>10</sub> Nonattainment Area. Note that there is also a small portion of Pinal County (Apache Junction) in the designated area.
1-29	<b>PM<sub>10</sub> Control Measures in Maricopa County</b> - The PM <sub>10</sub> Plan for the Maricopa County nonattainment area was approved by EPA in 2002. It contains 77 control measures that include PM <sub>10</sub> efficient street sweepers, PM <sub>10</sub> pollution alerts, and catalytic converters on charbroilers in fastfood restaurants like Wendy's and Burger King.

Slide No.	Notes
1-30	<b>A PM<sub>10</sub> Efficient Street Sweeper</b> - This is one of the types of street sweepers that is being used in the Valley to reduce PM <sub>10</sub> on paved streets and shoulders. A number of models of vacuum and water-assisted sweepers have been certified by the South Coast Air Quality Management District (in the LA Basin) as being PM <sub>10</sub> efficient, because they do a good job of picking up dirt and do not kick-up dust during the sweeping operation (avoiding the pig-pen effect).
1-31	<b>PM<sub>10</sub> Control Measures in Maricopa County</b> - PM <sub>10</sub> emission reductions for twelve of the 77 measures were quantified in the Plan. The combined effect of these twelve measures is a 39% reduction in annual emissions by 2006. The single most effective measure in the Plan is the strengthening and better enforcement of fugitive dust controls in Maricopa County Rule 310 and 310.01.
1-32	<b>2006 PM<sub>10</sub> Emission Reductions from Committed Control Measures</b> - The combined effectiveness of Rule 310 in controlling dust from construction, trackout and unpaved lots, (the first, second and fourth bars at the top of this graph) is more than 30 percent. This illustrates that Rule 310 reduces emissions more effectively than all other control measures combined. In comparison, stabilizing unpaved roads only reduces PM <sub>10</sub> by six percent and each of the other measures reduces emissions by less than one percent.
1-33	<b>Effectiveness of Rule 310</b> - Rule 310 reduces emissions from construction, vehicle track-out, and unpaved lots. The strengthening and better enforcement of Rule 310 is expected to decrease PM <sub>10</sub> emissions from construction and earthmoving activities by 19 percent, nearly half of the total reduction required to show attainment of the annual standard by 2006. Since reductions in dust generated by construction and earthmoving operations represent such a large share of control measure efficacy in the PM <sub>10</sub> Plan, it is essential for these reductions to be realized, so that the PM <sub>10</sub> standards can be attained by 2006. If the standards are not met by this date, EPA could impose a Federal Implementation Plan that is likely to be far more onerous than the current Serious Area PM <sub>10</sub> Plan.
1-34	<b>Source Contributions to Fall and Winter Visibility Impairment in Phoenix</b> - In the Phoenix urban area, the Brown Cloud is most visible on fall and winter days. The Brown Cloud is composed primarily of gases and fine particles emitted from combustion sources, rather than coarser particulates created by moving geologic material.  The pie chart shows that 9% of the brown cloud is caused by dust. About 40% of this Dust comes from construction and earthmoving activities; the remainder is due to agricultural activities and cars traveling on paved and unpaved roads. This chart also shows that exhaust from diesel construction equipment (called Off-road Diesel) is responsible for another 11% of the Brown Cloud. In 2001, the Arizona Legislature passed House Bill 2538 that included measures to control emissions from sources contributing to the Brown Cloud.
1-35	<b>ADOT Initiatives to Reduce Construction Dust</b> – During 2001-2003 the Arizona Department of Transportation sponsored a project to research, develop and implement education tools and outreach programs for reducing construction dust in

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Slide No.	Notes
1-35 (continued)	Maricopa County and other parts of Arizona. This project has identified practical and cost-effective methods to control fugitive dust at work sites and has developed materials to ensure that information, training, and certification programs are readily available to managers, site superintendents, subcontractors and other construction personnel. This Construction Dust Control Course is one product of the ADOT-sponsored research. Additional outreach and educational materials have been developed to provide follow-up information to construction personnel. A bi-lingual flipbook is available for use at construction sites, during tailgate sessions. A Construction Dust Guide, targeted at construction managers, provides an overview of Maricopa County Rule 310. A brochure is also being distributed to inform the public of the effort that the construction industry is making to reduce PM <sub>10</sub> . ADOT's overall objective is to make dust suppression a standard operating practice at its own highway construction sites, as well as all other construction sites in Arizona.
1-36	<b>Questions?</b> - Does anyone have any questions about the material that has been presented?



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## MODULE 2 - CONSTRUCTION DUST CONTROL REQUIREMENTS

Slide No.	Notes
2-1	<p><b>Construction Dust Control Requirements under Maricopa County Rule 310</b> - Previous Module 1 provided background information on air quality issues affecting Maricopa County and Arizona. That module covered the reasons that dust control is needed, and detailed the causes of PM<sub>10</sub> and the natural and man-made sources of fugitive dust. Module 1 discussed the actions already taken to reduce PM<sub>10</sub> emissions, including control measures that have been implemented.</p> <p>This Module covers construction dust control requirements and explains dust control measures for construction-related activities in Maricopa County. Subsequent modules will cover the enforcement of Rule 310 requirements and the associated penalties for non-compliance and will also examine dust control techniques for different dust generating activities.</p>
2-2	<p><b>Requirements for Construction Activities in Maricopa County</b> - Rule 310 requires firms or individuals planning earthmoving activities involving 0.1 acre or more to obtain an Earthmoving Permit, submit a Dust Control Plan, and comply with specific record-keeping, site maintenance, site signage, and other requirements.</p>
2-3	<p><b>Earthmoving Permit</b> - Now, we'll discuss who is required to apply for an Earthmoving Permit, and how to complete a permit application form. Refer to the sample Earthmoving Permit application form that was handed out to you.</p>
2-4	<p><b>Who Must Apply for a Permit</b> - The person responsible for any earthmoving operation that will disturb a total surface area of 0.10 acre or more must submit an Earthmoving Permit application. This "Responsible Official" could be an officer or decision-maker of a corporation, a partner of a partnership, the owner of a sole proprietorship, or the principal executive officer or ranking elected official of a public sector agency.</p>
2-5	<p><b>How to Complete a Permit Form</b> - The Earthmoving Permit application form consists of three sections, Applicant Information, Project Information, and Dust Control Plan. Three copies of the application must be submitted with the appropriate fee attached. For projects of between 0.1 acre and an acre in size, the fee is \$75. For projects of greater than one acre, the fee is \$36.00 per acre plus \$110.00 per site. Be sure to fill in all the applicant information blanks.</p> <p>Section 2 covers the project information including the type of project, the address and legal description, the size of area, in acres, to be disturbed, and a project start date. A schematic drawing of the project with dimensions of at least 8 1/2 inches by 11 inches must be included.</p> <p>Section 3 contains the Dust Control Plan, which we will cover in detail.</p>
2-6	<p><b>Elements of Earthmoving Permit Drawing</b> - The Permit drawing must contain the following elements:</p> <ul style="list-style-type: none"><li>• Entire project site boundaries</li><li>• Acres to be disturbed with linear dimensions</li><li>• Nearest public roads</li><li>• North arrow</li><li>• Planned exit locations onto paved public roadways</li></ul>

Slide No.	Notes
2-7	<b>Dust Control Plan</b> - The Dust Control Plan is the third section of the Earthmoving Permit application. Any project that is required to obtain an Earthmoving Permit must submit a Dust Control Plan. We will discuss the requirements of a Dust Control Plan as well as the preparation of a Plan. Refer to Section 3 of your Earthmoving Permit handout.
2-8	<p><b>Dust Control Plan Requirements</b> - The Dust Control Plan application contains a section for each of the activities that take place during a typical construction project that has the potential for generating fugitive dust. Included with each activity are several control measures; the applicant must identify which measure will be employed as the primary measure during the conduct of that activity, and which measures will be employed as contingency measures. For some activities, Rule 310 mandates the employment of a specific primary measure. In these cases, a pre-printed “P” appears next to the measure. Note that the control measures must be employed so as to be effective at all times during the conduct of the project—on non-work days and after hours, as well as when construction activity is taking place.</p> <p>Control measures to be identified by the applicant include a stabilization plan for any unpaved haul or access roads. Dust suppressants to be applied, if any, must be specified, including the method, frequency, and intensity of application, the type, number and capacity of application equipment. A plan to control trackout where unpaved or access points join paved public roadways must also be included.</p>
2-9	<p><b>How to Prepare a Dust Control Plan</b> - How to Prepare a Dust Control Plan:</p> <ul style="list-style-type: none"> <li>• Put a check ( ✓ ) in the box in front of all the sources of fugitive dust that you anticipate</li> <li>• Write the letters “NA” in the box in front of all the sources of fugitive dust that you do not anticipate implementing</li> <li>• Write the letter “P” next to primary control measures that you will implement</li> <li>• Write the letter “C” next to contingency control measures that you will implement in cases where the primary measures are unavailable or inadequate</li> </ul> <p>Be sure to fill in the details for each control measure that you intend to use.</p>
2-10-A	<b>Example Fugitive Dust Source</b> - The first source category listed in the Dust Control Plan form is “Unpaved Haul/Access Roads.” If you think unpaved haul or access roads are a potential source of fugitive dust for your project, first...
2-10-B	<ul style="list-style-type: none"> <li>• Check-mark source</li> </ul>
2-10-C	<ul style="list-style-type: none"> <li>• Next, write a “P” next to primary control measure and fill in details</li> </ul>
2-10-D	<ul style="list-style-type: none"> <li>• Finally, write a “C” next to contingency control measure(s) and fill in details</li> </ul>
2-11	<b>Record-keeping Requirements</b> - Rule 310 requires that the recipient of an Earthmoving Permit keep daily written log detailing use of control measures agreed to and keep copies of approved Dust Control Plans. Documents must be kept for at least 6 months from end of operations, or at least 1 year total.

Slide No.	Notes
2-12-A	<b>How to Fill Out a Dust Control Log</b> - How to Fill Out a Dust Control Log: A log page must be kept for each week of the project. Each page must list all the potential dust generating activities that you have included in the Dust Control Plan. A number of formats for a Dust Control Log exist. However, the form shown here is the one EPA prefers.
2-12-B	At the top of the form, fill-in project and contractor information, and the date for each daily sheet. Note that each time you check for dust control throughout the day, you will be entering a “Y” for control measures active at that time, an “N” for those not being used at the time of the check, or an “NA” for those not applicable.
2-13-A	<b>How to Fill Out a Dust Control Log</b> - Here is a close-up of a portion of the form shown on the preceding slide.
2-13-B	Each time you check for dust control, you must fill in the time of the check, and a “Y”, “N”, or “NA” next to every measure in the column under the time you entered.
2-13-C	Note that the measures in use for controlling dust may change during the day. Use the “comments” space to record any pertinent action, such as the implementation of a contingency measure in response to observed increase in area opacity levels.
2-14	<b>General Standards</b> - Rule 310 provides general standards both for the level of opacity that is acceptable and the means of measuring the opacity. Opacity is the reduction in visibility caused by a cloud of dust. The standard limitation for Visible Emissions within Maricopa County is 20 percent opacity.
2-15	<b>20 percent Opacity Limit</b> - County inspectors are trained to read opacity, but there are ways that you can estimate opacity on the job. Twenty percent opacity is a faint cloud of dust through which you can readily see background details. Measures controlling visible emissions must be implemented during all periods of dust generating operations. The specific dust control measures, including contingency measures, are contained in the Dust Control Plan that is part of each regulated site’s earthmoving permit.
2-16	<b>20 percent Opacity Limit</b> - A regulated site should implement contingency measures as necessary to prevent visible emissions from reaching 20 percent opacity, rather than waiting until emissions reach that level. Additional precautions should be taken to prevent the dust cloud from crossing the property line.  The 20 percent opacity limitation applies at all times except when the average wind speed is greater than 25 miles per hour provided that all reasonably available control measures contained in the approved Dust Control Plan are in place.  Twice a year classes are held for certification in reading Visible Emissions. While not mandatory, all superintendents, project managers, and foremen are encouraged to attend. Becoming certified enables you to determine opacity and your project’s level
2-16	of compliance with this requirement. Contact Maricopa County at (602) 506-6700 for details on class times and locations.

Slide No.	Notes
2-17-A	<b>Sign Requirements</b> - Rule 310 contains regulations that govern the signage that appears on a job site of five acres in size or larger. While these signs facilitate compliance and enforcement, they also help to market the positive efforts of a project to control fugitive dust.
2-17-B	<ul style="list-style-type: none"> <li>The minimum dimensions of the sign are 4 feet wide by 4 feet high</li> </ul>
2-17-C	<ul style="list-style-type: none"> <li>The name of the project, the name of the contractor, and the County complaint number must be provided in block letters at least 4 inches high</li> </ul>
2-18	<b>Control Measures Required for Construction Activities in Maricopa County</b> - Now, we'll discuss other control measures provided for the Dust Control Plan application. These activities fall into the four general areas of vehicle use, disturbed surface areas, material hauling, and spillage and trackout. In Module 4, we will discuss in more detail some of the techniques that have proved successful in controlling dust generated by these activities.
2-19	<b>Vehicle Use</b> - To hold down dust on open area and vacant lots, motorized vehicle operation should be discouraged or prevented. Restrict trespassing with signs or block access with barriers. Apply water to unpaved parking lots. If possible, apply and maintain gravel, recycled asphalt, or other suitable material, or pave the lot. Use dust suppressant on unpaved lots.
2-20	<b>Vehicle Use</b> - Limit vehicle speeds on unpaved haul and access roads to 15 mph. Apply water, so that surface is visibly moist. If possible, pave the road, or apply and maintain gravel, recycled asphalt, or other suitable material. Apply dust suppressant to unpaved roads.
2-21	<b>Disturbed Surface Areas</b> - Before beginning earthmoving operations in a specific area, pre-water the area to the planned depth of cuts. Phase work to reduce the amount of disturbed surface area at any one time. During earthmoving operations, apply water or dust suppressants, construct fences or wind barriers, and be prepared to cease operations as a contingency—such as during high wind events, for example.
2-22	<b>Disturbed Surface Areas</b> - To temporarily stabilize a disturbed surface area during a project, apply water or dust suppressants, establish a vegetative ground cover, restrict vehicular access. After earthmoving operations have ended, attempt to restore area to resemble undisturbed conditions, establish vegetative ground cover, and apply and maintain dust suppressants as needed.
2-23	<b>Material Hauling - On-site</b> - When hauling material on the job site, leave a freeboard of at least three inches when loading trucks. Prevent spillage from holes or other openings in the floor, sides, or tailgate of the cargo compartment. If you do exit the site, be sure to drive over a suitable trackout control device such as a gravel pad or a grizzly.
2-24	<b>Material Hauling - Off-site</b> - When hauling material off the job site, leave a freeboard of at least three inches when loading trucks. Prevent spillage from holes or other openings in the floor, sides, or tailgate of the cargo compartment as before. In addition, cover the load with a tarp. Clean the interior of empty cargo compartment before leaving the site. Always drive over a suitable trackout control device such as a gravel pad or a grizzly.

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Slide No.	Notes
2-25	<b>Spillage and Trackout</b> - To control spillage and trackout, if the disturbed area is 5 acres or larger, Rule 310 requires that you install a gravel pad at least 30 feet wide, 50 feet long, and 6 inches deep at all access points. Also consider installing a grizzly or wheel wash system at all access points or paving access roads for a distance of at least 100 feet and a width of at least 20 feet. Sweep up any trackout deposits that end up on paved public roads.
2-26	<b>Questions?</b> - Does anyone have any questions about the material that has been presented?

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## MODULE 3

### ENFORCEMENT OF DUST CONTROL AT CONSTRUCTION SITES

Slide No.	Notes
3-1	<b>How Construction Dust Control is Enforced in Maricopa County</b> - Modules 1 and 2 explained why dust control is needed and summarized the requirements of the Maricopa County Dust Control Rule 310. This third module discusses how Rule 310 is enforced in Maricopa County
3-2	<b>Enforcement Objectives</b> – The purpose of Maricopa County’s Enforcement Policies are to “provide a consistent reasonable process for documenting potential air quality violations, notifying alleged violators, and initiating enforcement action to ensure that violations are addressed in a timely and appropriate manner.”
3-3	<b>How Violations Are Discovered and Documented</b> - County inspectors and enforcement officers may encounter violations of Rule 310 while conducting an inspection, investigating a complaint, or by random field reviews. When a potential violation of Rule 310 is observed, County personnel fill out a report. The report documents where, when, and how events occurred that resulted in the violation and the name, affiliation, title, and statements of people interviewed. Reports typically include evidence such as photos and analytical tests that support the failure to comply.
3-4	<b>How Violators Are Notified</b> - Notification of a violation is provided in writing to an owner, operator or other responsible official. The most common method of notification is a Notice of Violation. For minor infractions, a Compliance Status Notification may be issued, identifying the problem and requesting that it be remedied. A less common method for more severe violations is a Notice to Appear and Complaint, also called a “citation,” which is a Class I Misdemeanor.
3-5	<b>Rule 310 Violations</b> – The following violations are specifically identified in the County’s Enforcement Policy. <ul style="list-style-type: none"> <li>a) Knowingly or willfully failing to obtain a County earthmoving permit.</li> <li>b) For unpaved parking lots – Opacity exceeds 20 percent and both the silt loading and silt content limitations are exceeded.</li> <li>c) For unpaved haul/access roads – More than 20 vehicle trips per day are observed passing a particular point or vehicles are exceeding 15 mph.</li> </ul>
3-6	<ul style="list-style-type: none"> <li>d) <b>For disturbed surface areas on which no activity is occurring &amp; none of the following exist:</b> <ul style="list-style-type: none"> <li>1. Visible crust</li> <li>2. Particles will not become airborne in light breeze (about 2.3 mph)</li> <li>3. Flat vegetative cover of at least 50 percent</li> <li>4. Standing vegetative cover of at least 30 percent</li> <li>5. Standing vegetative cover of at least 10 percent and threshold friction velocity of at least 43 cm/sec</li> <li>6. More than 10 percent cover of non-erodible elements</li> </ul> </li> </ul>

Slide No.	Notes
3-7	e) For hauling - The freeboard on a truck is measured and determined to be less than three inches <i>or</i> a load of bulk material leaving a site is not covered <i>or</i> loss of material occurs from holes or other openings in the cargo space, <i>or</i> vehicles traversing a paved public road fail to pass over a trackout control device.
3-8	f) For trackout - <ol style="list-style-type: none"> <li>1. For work sites with a disturbed surface area of at least five acres, vehicles are observed exiting a work site onto a paved road without passing over a trackout control device.</li> <li>2. Deposits extending 50 feet or more along the road are observed on a paved public road originating from a work site exit.</li> <li>3. Particulate matter is observed being spilled or deposited at least 50 feet from the work site exit onto a road from the cargo compartment, tires, or other exterior surfaces of a vehicle exiting the work site.</li> </ol>
3-9	g) For earthmoving operations – One acre or more is being disturbed, the site’s Dust Control Plan designates water as the control measure, and no water is being applied while the earthmoving operation is being conducted. h) For unpaved parking lots – More than 100 vehicles are present and the (1) opacity exceeds 20 percent and the silt loading exceeds 0.33 oz/ft <sup>2</sup> or (2) the silt content exceeds 8 percent.
3-10	<b>After a Notice of a Rule 310 Violation is Issued -</b> After the Air Enforcement Section reviews documentation of the violation supporting evidence, the Section may <ul style="list-style-type: none"> <li>• Issue a Notice of Violation</li> <li>• Issue an Order of Abatement</li> <li>• Refer the violation to the County Attorney’s Office</li> <li>• File a Notice to Appear and Complaint, or</li> <li>• Send the case back to the Air Compliance Section with a written request for additional information.</li> </ul>
3-11	<b>Violations Referred to the County Attorney’s Office -</b> The County Attorney determines if there is sufficient evidence to support a complaint. If there appears to be sufficient evidence, the Attorney’s Office may pursue one of three options: <ol style="list-style-type: none"> <li>1. Settlement Conference with Consent Agreement – The Attorney may request a conference with the violator/responsible party prior to filing a complaint. If an agreement is reached, the parties will enter into a written agreement that may include monetary penalties, reimbursement of costs for the investigation and prosecution, violator education, community service, and other sanctions.</li> <li>2. Filing of Civil Complaint – The County Attorney may file a civil complaint seeking monetary penalties and injunctive relief.</li> <li>3. Filing of Criminal Complaint – A criminal complaint may be filed if there is a reasonable likelihood of conviction.</li> </ol>

Slide No.	Notes
3-12	<p><b>Penalties</b> - The purpose of the monetary penalties is to serve as a disincentive for the regulated community to commit violations of Rule 310. The amounts must be set high enough that it is more attractive to implement dust control measures than pay the fines. The amount of the penalty is determined by considering the severity of the violation, the costs of not complying, recovery of enforcement costs, and any mitigating factors. The maximum penalty allowed by state law is \$10,000 per day per violation.</p>
3-13	<p><b>Compliance Status</b> – In 2001, Maricopa County issued 3,608 earthmoving permits, conducted about 8,000 earthmoving inspections, and responded to 1,346 complaints about dust generation from earthmoving activities. During the same year, the County issued 919 Notices of Violation, about one-third of which were for sites not having the required permit. Another 523 Compliance Status Notifications were issued. Of these actions, 402 cases were referred to enforcement, 251 cases were referred to the County Attorney’s Office, and 186 cases were settled. About \$680,000 in penalties were collected between May 2000 and December 31, 2001. The County estimates that approximately 77 percent of the sources were in compliance with Rule 310 during 2001.</p>
3-14	<p><b>What are the Most Common Rule 310 Violations?</b>  The most common Rule 310 violations found in Maricopa County are:</p> <ul style="list-style-type: none"> <li>• Soil stabilization not maintained during non-working days or hours</li> <li>• Failure to obtain required permits or have them available on site</li> <li>• Failure to follow the Dust Control Plan</li> <li>• No gravel pad at construction site exits</li> <li>• Lack of pre-wetting of work areas and haul routes</li> <li>• Insufficient number of water trucks</li> <li>• Haul roads not stabilized or watered</li> <li>• Failure to clean up trackout or deposits on paved public roads</li> <li>• No tarps on haul trucks</li> <li>• Lack of recordkeeping showing implementation of the Dust Control Plan</li> </ul> <p>The most common violation in recent years has been a failure to have an earthmoving permit located on site.</p>
3-15	<p><b>Frequently-Encountered Excuses –</b></p> <ul style="list-style-type: none"> <li>• The water truck or the street sweeper...is on the way, broke down, got lost, etc.</li> <li>• The soil at this site makes dust control impossible.</li> <li>• Give me a break – we live in the desert!</li> <li>• How could I know it would be windy today?</li> <li>• I left my permit on my desk at the office.</li> <li>• What a coincidence, I was going to get my permit today!</li> <li>• One of the subs has the permit; you know how they are!</li> </ul>



## MODULE 4 - STRATEGIES TO ASSIST CONSTRUCTION ACTIVITIES IN CONTROLLING DUST

Slide No.	Notes
4-1	<b>Strategies to Assist Construction Activities in Controlling Dust</b> - The previous modules of the Course provided background - explained why dust control is needed, outlined the requirements of Rule 310, and discussed enforcement of Rule 310. This Module will examine dust control strategies, including project design, site planning, and available resources.
4-2	<b>Designing and Implementing a Construction Project to Minimize Dust</b> - Addressing dust control issues before beginning a project can save time, money, and project resources. Site-specific air quality and dust control issues—and appropriate ways to tackle them—should be identified before work begins. Strategies for trackout prevention, the handling, storage, and transportation of bulk materials on and off-site, dust-minimizing procedures during construction, and site maintenance should all be discussed.
4-3	<p><b>Site Planning</b> - Phasing the project and planning site layout carefully will result in minimized soil disturbance. Lessening the amount of surface being disturbed at any one time reduces the amount of control required and the amount of water or dust suppressant needed. Evaluate dust control procedures periodically to identify additional issues that develop as the job progresses.</p> <p>Install wind fences or barriers (less than 50 percent porosity). Place barriers around storage piles, parking, and equipment staging areas. Develop semi-permanent staging areas to cut down on the amount of disturbed area. Restrict access on unpaved areas to vehicles and equipment that are necessary that day. Limit unnecessary travel on unpaved surface areas. Restabilize disturbed surfaces by paving permanent roads and restoring vegetation as soon as possible. Allow time for pre-wetting areas where excavation or trenching will occur.</p> <p>Make sure everyone working on the job knows all the requirements for dust control and who is in charge. Encourage a proactive and continuous focus on air quality issues on the job site.</p>
4-4	<p><b>Trackout</b> - Control of trackout is required for all sites with disturbed area of 5 acres or more, or sites from which 100 yards or more of bulk materials are hauled on-site or off-site per day. Trackout is controlled through the use of gravel pads, grizzlies, paving, and appropriate watering.</p> <p>Trackout that extends 50 linear feet or more onto a paved public road must be cleaned up immediately. Otherwise, the trackout must be cleaned up by the end of the workday. Cleanup may be performed with a street sweeper or wet broom with sufficient water, if applicable, at the speed recommended by the manufacturer or by manually sweeping up the deposits.</p>
4-5	<b>Strategies for Bulk Material Handling, Storage and Transportation</b> - Material handling refers to many types of earthmoving activities on construction sites, including loading and hauling. These types of activities can be significant sources of fugitive dust. However, dust control during loading and hauling can be easily achieved through careful planning and proper implementation of controls. When

Slide No.	Notes
4-5 (continued)	<p>planning a construction project involving earthmoving activity, strategies for bulk material handling, storage, and transportation that minimize dust generation must be developed. Strategies are needed for handling or hauling material off-site onto paved public roadways, completely within the boundaries of the work site, or when crossing a public roadway that is open during construction. Strategies for preventing open storage piles from creating dust are also needed.</p>
4-6	<p><b>Bulk Material Hauling Off-site Onto Paved Public Roadways</b> - Allow for a freeboard of at least three inches when loading haul trucks. Prevent spillage from any openings: floor, sides, or tailgates of cargo compartment. Mist material with water while stacking. Mix excavated material with water prior to loading. Empty loader slowly and keep bucket close to the truck while dumping.</p>
4-7	<p><b>Bulk Material Hauling Off-site Onto Paved Public Roadways</b> - Tarps are required on haul trucks to prevent wind blown dust. Do not overload the truck! Keep your load 3 to 6 inches below the freeboard to minimize spillage. Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage. Daily vacuuming, wet broom cleaning, or covering of cargo compartment interiors of empty trucks is required to control trackout. Have all trucks drive over a gravel pad or grizzly when leaving the site.</p>
4-8	<p><b>Bulk Material Hauling</b> - When hauling bulk material within the boundaries of the work site or when crossing a public roadway open during construction, be sure to allow for a freeboard of at least three inches when loading haul trucks. Prevent material from spilling from any openings in the floor, sides, or tailgates of cargo compartment and control trackout.</p>
4-9	<p><b>Bulk Material Hauling On site, Completely Within Site Boundaries</b> - When hauling bulk material completely within the site boundaries, limit vehicular speeds to 15 mph, and apply water to top of load to keep dust emissions from exceeding 20 percent opacity limit.</p>
4-10	<p><b>Open Storage Pile</b> - Applicable regulations define an “open storage pile” as any accumulation of bulk material with a 5 percent or greater silt content that is 3 or more feet in height at any point and has a total surface area of 150 square feet or more. Suppliers of rock products used in construction include silt content in the specifications. The silt content of excavated soil always exceeds five percent.</p> <p>When adding material to the pile or removing material from the pile, apply water as needed to suppress dust. When not working with the pile, cover it with a secured tarp, water the pile to keep the moisture content of the soil at 12 percent or higher, or water until a surface crust forms that will prevent wind erosion.</p>
4-11	<p><b>Construction Operations</b> - We will now discuss four areas that typically generate dust during construction work:</p> <ul style="list-style-type: none"> <li>• Disturbed surface area - pre-activity</li> <li>• Disturbed surface area - during construction</li> <li>• Earthmoving operations on disturbed surface areas 1 acre or larger</li> <li>• Unpaved haul and access roads</li> </ul>

Slide No.	Notes
4-12	<b>Disturbed Surface Area -Pre-activity</b> - To minimize dust generation from disturbed areas before beginning construction, plan ahead, pre-water work site to the depth of cuts, and proceed in stages to minimize amount of disturbed surface area present at any given time.
4-13	<b>Disturbed Surface Area During Construction</b> - During construction, apply water or dust suppressant to work area and construct fences or 3 to 5 foot high wind barriers adjacent to roadways or urban areas. During grading, water using a water truck; during trenching, water using a fine spray or mist; and during screening, mist material after it drops from the screen.
4-14	<b>Earthmoving Operations on Disturbed Surface Areas 1 Acre or Larger</b> - When the area under construction is 1 acre or larger, water must be applied during earthmoving operations, if water is the chosen control measure.
4-15	<p><b>Unpaved Haul and Access Roads</b> - Rule 310 requires that vehicle speed over unpaved haul and access roads must not exceed 15 mph and the number of trips must not exceed 20 per day unless</p> <ul style="list-style-type: none"> <li>• Water is applied in sufficient quantity to maintain a moist surface</li> <li>• Gravel, recycled asphalt, or other suitable material is applied and maintained</li> <li>• A dust suppressant is used as directed by the manufacturer, or</li> <li>• The access roads are paved</li> </ul> <p>Be sure not to over-water—muddy conditions will increase trackout.</p>
4-16	<b>Site Maintenance</b> - Proper maintenance of the job site will reduce fugitive dust from unpaved parking lots, open areas and vacant lots, and disturbed surface areas. Surface areas that will be disturbed again during the current project should be temporarily stabilized during non-work days and after hours. Those areas that will not be disturbed again must be permanently stabilized within eight months after dust-generating operations have ended.
4-17	<b>Unpaved Parking Lots</b> - Dust from an unpaved parking lot must be limited by applying and maintaining a gravel, recycled asphalt, or other suitable surface, by watering or using a dust suppressant, or, of course, by paving the lot.
4-18	<p><b>Open Areas and Vacant Lots</b> - To reduce fugitive dust from open areas and vacant lots, water the areas to form a crusted surface. Prevent motorized vehicles from entering, driving across, or parking within the areas. Uniformly apply and maintain surface gravel or soil stabilizers to all areas that have been disturbed by motor vehicles or off-road vehicles.</p> <p>If the area cannot be paved, Rule 310 requires that these areas be restored so that the vegetative ground cover and soil characteristics are similar to those of adjacent or nearby undisturbed native conditions.</p>
4-19	<b>Disturbed Surface Areas - Temporary Stabilization</b> - During non-work days and after hours, surface areas that have been disturbed during construction activity must be temporarily stabilized by treating with a dust suppressant. Motorized vehicles must be prevented from entering, driving across, or parking within the areas.
4-20	<b>Disturbed Surface Areas - Permanent Stabilization</b> - Within eight months after dust -generating operations have been completed, site areas that were disturbed must

Slide No.	Notes
4-20 (continued)	be permanently stabilized. Efforts should be made to restore these areas so that the vegetative ground cover and soil characteristics are similar to those of adjacent or nearby undisturbed native conditions. Alternatively, the areas should be graveled, paved, or treated with a dust suppressant. Establish sufficient ground cover.
4-21	<b>Resources Available to Reduce Dust Before, During, and After Construction -</b> Let's review means of reducing dust before, during, and after construction. These include trackout control devices, effective watering, chemical stabilizers or dust suppressants, and wind barriers.
4-22	<p><b>Trackout Control Devices - Gravel Pad.</b> Dust Control Plans require that stabilized construction entrances be installed at all access points if 100 yards or more of bulk material per day is to be hauled on or off the site, or if the site is larger than 5 acres. A gravel pad is a stabilized construction entrance, designed to remove the mud and dirt from the tires of vehicles leaving a construction site. Using gravel pads reduce fugitive dust caused by trackout onto paved roads and surfaces. The use of such pads may also reduce the need for street sweepers or laborers to remove trackout from paved surfaces, as well as help prevent storm water pollution.</p> <p>Gravel pads are typically made from one inch to three inches in diameter, washed, well graded gravel or crushed rock. The gravel pad should be at least 30 feet wide by 50 feet long, and a minimum of 6 inches deep. When installing the gravel pad, make sure that it is properly graded.</p>
4-23	<b>Trackout Control Devices - Grizzly</b> - A Grizzly is a device using rails, pipes or grates to dislodge mud, dirt and debris from the tires and undercarriage of vehicles that drive over it prior to leaving the work site. An example of a grizzly is the "shaker" invented by Jeff Lange for Kitchell Contracting. This device is reusable, transportable by pick-up truck, easy to assemble, and can be expanded to accommodate various sizes of haul vehicles. More information about the shaker device can be obtained at <a href="http://www.trackoutcontrol.com">www.trackoutcontrol.com</a> .
4-24	<p><b>Effective Watering</b> - Watering prior to excavation or earthmoving is an effective means of suppressing dust. When applied regularly, water provides temporary stabilization to disturbed surface areas and reduces fugitive dust caused by earthmoving and driving on non-stabilized surface areas.</p> <p>Watering makes roads and disturbed surfaces appear moist with minimal silt, creates a crusted surface on the soil, provides soil moisture content optimal for compaction, and prevents visible emissions from exceeding 20 percent opacity. Adequately watered soil should have a crusted surface that is not easily crumbled between your fingers. The soil moisture content should be optimal for compaction.</p>
4-25	<p><b>Effective Watering Strategies</b> - Wet the area to the depth of cuts or equipment penetration 15 to 30 minutes prior to start of work. Apply water at the end of the day to soak the next day's work area overnight. During grading, apply water in sufficient quantity to maintain a moist surface using a water truck.</p> <p>After clearing an area, apply water frequently enough to prevent visible emissions (at least every 2 hours). Consider setting up automatic sprinkler/spray bar systems in these areas. Surfactants or palliatives added to water increase penetration.</p>

Slide No.	Notes
4-25 (continued)	<p>If the area is inaccessible to water trucks due to slope conditions or other safety factors, watering should be conducted with water hoses or sprinkler systems. Remember: many cities have restrictions for construction on sloped areas -- be sure you comply with those as well.</p>
4-26	<p><b>Chemical Stabilizers</b> - or dust palliatives - are products that are applied to soil surfaces in order to limit the creation of fugitive dust emissions. A variety of products are available, and finding one that fits your project's activities can reduce the need for watering, which is desirable in our desert environment. Over the long term, using dust palliatives can result in significant cost savings over regular, frequent watering. In some instances, the resulting soil stabilization can last from 1 to 12 months.</p> <p>Some dust palliatives are not designed for areas subject to daily disturbances, high volume traffic, or heavy equipment traffic—check with the product vendor if these conditions exist at your site.</p> <p>Be sure to ask the product vendor for the recommended dilution, application rate, and application frequency of the product you choose because these vary significantly by product. Before a weekend, holiday, or other inactive period of less than 5 days, a dust palliative that is diluted to not less than 1/20 of the concentration required to stabilize a surface for 6 months is recommended.</p> <p>Maricopa County requires the use of environmentally compliant dust palliatives. Be sure to check with local authorities before choosing a dust suppressant. A contractor is responsible for assuring that its use of dust palliatives is in compliance with all applicable environmental laws.</p>
4-27	<p><b>Wind Barriers</b> - Wind barriers are placed along one or more sides of a job site to reduce the amount of wind blown dust leaving the site. Creating a wind barrier could involve installing wind fences, constructing berms, or parking on-site equipment so that it blocks the wind. Alone, these barriers are not adequate for controlling dust. Wind barriers must be implemented together with the application of water or dust palliatives. These barriers increase the dust control effectiveness of water or palliative application.</p> <p>Effective wind barriers are 3-sided structures made of material 3 to 5 feet high with a porosity of 50 percent or less. A wind barrier for a storage pile should be as high as the top of the pile.</p>
4-28	<p><b>Additional Benefits of Controlling Dust</b> - Besides avoiding violations of Rule 310, do construction companies derive any additional value by controlling dust?</p> <ul style="list-style-type: none"> <li>• Public and community “good will”</li> <li>• Employee health considerations</li> <li>• Competitive advantage for early adopters</li> </ul>

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## **MODULE 5 - VISIBLE EMISSIONS EVALUATION AT CONSTRUCTION SITES**

This module will describe the techniques used to identify the opacity levels of dust generated by construction activities. The script and slides for this module are being developed by the Arizona Department of Environmental Quality and will be added to this guide when completed.

## MODULE 6 - ADDITIONAL INFORMATION ON CONSTRUCTION DUST CONTROL

Slide No.	Notes
6-1	<p><b>Opportunities for Continuing Education on Construction Dust Control</b> - We have reviewed the reasons why it is important to control dust, dust control requirements, the ways in which the requirements are enforced, strategies for compliance, and how to evaluate opacity levels. The purpose of this module is to briefly introduce you to resources that supplement the training you have received today.</p>
6-2	<p><b>Construction Dust Control Toolkit</b> – Before leaving today, you will be provided with a toolkit that has been developed to be useful in presenting dust control concepts to other individuals in your organization, both in a classroom setting and at on-site meetings with construction workers. The contents of the toolkit are as follows:</p> <ul style="list-style-type: none"> <li>• MCESD Video – “Effective Dust Control &amp; Overview of Rule 310,” a 10-minute VCR tape</li> <li>• Training Modules – A CD containing the PowerPoint presentation and script for this course can be used in a classroom setting to train others in your organization and can be tailored to the audience by removing and/or rearranging modules.</li> <li>• Quick Reference Dust Control Guide - This water-resistant flipbook in English and Spanish provides 5-minute topics on dust control that can be introduced at construction site tailgate meetings.</li> <li>• Calendars and other reinforcement items – These items are provided to be constant reminders of the need to control dust at work sites.</li> </ul>
6-3	<p><b>Photo of Toolkit and Contents</b></p>
6-4	<p><b>Guide to Construction Dust Control Measures in Maricopa County</b> – In addition to the toolkit, a construction dust control measures guide has been developed. The target audience for this guide is construction company managers and employees impacted by Rule 310 as well as industry trade associations. To obtain a copy of the Guide, contact the Blue Skies Coordinator at ADOT.</p>
6-5	<p><b>Voluntary Dust Control Certification Program</b> - A voluntary certification program has been established to encourage managers, superintendents and other personnel to learn about and practice effective dust control at construction sites. The certification program is being administered by the Blue Skies Coordinator at ADOT. Two levels of voluntary certification are being offered: certified dust control specialist and certified dust control instructor. Certificates will be issued to individuals meeting the requirements for either a specialist or instructor.</p> <p>Dust Control Specialists are required to attend the dust control course and pass an exam on the material presented in the class with a grade of 75 percent or better. To maintain dust control certification, a Specialist must meet the above requirements every two years. Dust Control Instructors are also required to attend the dust control course and pass the exam with a grade of 75 percent or better. In addition, an Instructor must teach a dust control course (Modules 1-4 and 6) under the</p>

Slide No.	Notes
6-5 (continued)	supervision of a certified instructor. To maintain certification, an Instructor must pass the Dust Control exam every year and receive certification in Visible Emissions Evaluation (Smoke School) every six months.
6-6	<b>Additional Sources of Information</b> include: <ul style="list-style-type: none"> <li>• Dust Devil Academy</li> <li>• Arizona Air Aware Initiatives</li> <li>• “Reducing Air Pollution from Construction” Course</li> </ul>
6-7	<b>Dust Devil Academy</b> - The Maricopa County Small Business Environmental Assistance Program maintains a website <a href="http://www.maricopa.gov/sbeap/basepage.htm">www.maricopa.gov/sbeap/basepage.htm</a> that provides valuable and up-to-date information on Rule 310 and dust control for construction sites, together with testimonials and success stories.
6-8	<b>Arizona Air Aware Initiatives</b> - The Arizona Department of Transportation maintains a website <a href="http://www.dot.state.az.us/ABOUT/air/index.htm">www.dot.state.az.us/ABOUT/air/index.htm</a> devoted to air quality issues affecting the State of Arizona. Innovative programs sponsored by ADOT include an air quality outreach program in Central Yavapai County (Prescott area), a construction dust educational and outreach program for Maricopa County, and an air quality sustainability program in Coconino County.
6-9	<b>“Reducing Air Pollution From Construction” Course</b> - A course entitled, “Reducing air Pollution from Construction” is offered by Paradise Valley Community College and taught by Robert R. Treloar. Contact PVCC for a course schedule. The course is co-sponsored by the Maricopa County Small Business Environmental Assistance Program.
6-10	<b>Dust Control Exam</b> - A multiple-choice test will now be administered. This test will reinforce the most important points presented in the class today. Please write your name and contact information (address, telephone or e-mail) at the top. If you are interested in becoming certified as a dust control specialist or instructor, check “yes” at the bottom and we will notify you of the test results. You will need to answer 75% of the questions correctly in order to pass the test for certification purposes. After you have turned in your tests, I will go over the questions and the correct answers. I hope you have found the information provided in this session today to be useful. Please write any comments you may have in the space provided at the end of the exam.



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# EARTHMOVING PERMIT APPLICATION

## GUIDANCE FOR FILLING-OUT AN APPLICATION FOR AN EARTHMOVING PERMIT

### Section 1 – Applicant Information

Submit the Appropriate Fee for your Earthmoving Permit application, according to the following:

- If total surface area disturbed is 0.1 acre to less than 1 acre, submit \$75.
- If total surface area disturbed is 1 acre or more, submit \$36/acre plus \$110 per site

Make checks payable to “Maricopa County Environmental Services Department” or “M.C.E.S.D.”

A Responsible Official is one of the following:

- For a corporation, a corporate officer or any other person who performs similar policy or decision making functions for the corporation, or a duly authorized representative of such person, if the representative is responsible for the earthmoving operations in the subject application. Delegation of authority to such representative shall be approved in advance by the permitting authority.
- For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
- For a municipality, state, federal, or other public agency, the principle executive officer or ranking elected official of that entity.

### Section 2 – Project Information - Drawing

Section 2 – Project Information – Drawing is self-explanatory. However, please remember, when calculating the amount of disturbed area for trenching, include the dimensions of the trench, stockpiling areas, and staging areas.

### Section 3 – Dust Control Plan

An Earthmoving Permit must contain a Dust Control Plan. You may fill-out Section 3 of the Application For An Earthmoving Permit and submit it as your Dust Control Plan or you may write your own Dust Control Plan describing all control measures to be used during the project and submit it as your Dust Control Plan.

**Water:** Sources of fugitive dust, listed in Section 3, that include “Apply water” as a control measure require specifics about water availability and water application. If you choose to apply water as a control measure, you must fill-in the blanks, under both Water Availability and Water Application. For Water Availability, indicate which of the

following will be utilized: water storage tank on-site; metered hydrant on-site; water not on-site, describe water source and state the distance from site to water source; water provided through irrigation; other – specify source. For Water Application, indicate which of the following will be utilized: apply water using a water truck – state number of trucks and number of gallons per truck; apply water using hoses; apply water using sprinklers.

**Dust Suppressants:** If you choose the control measure “dust suppressant(s) other than water”, you must describe the method of dust suppressant(s) application. Express frequency in terms of how often the surface will receive a complete application of dust suppressant(s) (i.e., the frequency may be three applications per day). Express intensity in units such as gallons per minute. Also, include as an attachment:

- Product specifications or label instructions for approved usage
- Information on environmental impacts and approvals or certifications related to appropriate and safe use for ground application

**Describing Major Project Phases:** You may use the Project Information Drawing in Section 2 to show the various project phases, along with a time line depicting relative start and stop times. Indicate on the line provided for describing major project phases that you have shown the various project phases on the Project Information Drawing.

**Bulk Material Handling And Hauling:** Rule 310 defines “bulk material handling, storage, and/or transporting operation” as the use of equipment, haul trucks, and/or motor vehicles, such as but not limited to the loading, unloading, conveying, transporting, piling, stacking, screening, grading, or moving of bulk materials, which are capable of producing fugitive dust at an industrial, institutional, commercial, governmental, construction, and/or demolition site. When designing your Dust Control Plan, you must choose control measures for all bulk material handling and bulk material hauling that you will do onsite within the boundaries of the work site and that you will do off-site onto paved public roadways.

**Open Storage Piles:** The control measure options for open storage piles are included with bulk material handling control measure options, because an open storage pile is any accumulation (by stacking, loading, and unloading) of bulk material with a five percent or greater silt content that in any one point attains a height of three feet and covers a total surface area of 150 square feet or more. If you choose to construct wind barriers around open storage piles, as a control measure, you must construct the wind barriers around three sides of the open storage pile. The sides’ length must be no less than equal to the length of the pile; the sides’ distance from the pile must be no more than twice the height of the pile; the sides’ height must be equal to the pile

height, and the material of which the sides are made must be no more than 50 percent porous.

**Spillage, Carry-Out, Erosion, And/Or Trackout:** Rule 310, Subsection 308.3(b) requires spillage, carry-out, erosion, and/or trackout to be cleaned up at least at the end of the work day and immediately, if it extends more than 50 feet along a paved public roadway. You must specify, on the Dust Control Plan for any site that exits onto a paved public road, the control measures that you will use for both immediate clean-up and after-the-work-day clean-up.

**Weed Abatement By Discing Or Blading:** Watering, both prior to and during weed abatement by discing or blading, has been pre-designated as the primary control measure, since both are required by Rule 310, Subsection 308.8. You must choose a contingency control measure and at least one control measure to be implemented following weed abatement by discing or blading.

**Vegetative Ground Cover:** If you choose to “Establish vegetative ground cover” as a control measure, you must comply with the standards in Rule 310, Subsection 302.3:

- Maintain a flat vegetative cover (i.e., attached (rooted) vegetation or unattached vegetative debris lying on the surface with a predominant horizontal orientation that is not subject to movement by wind) that is equal to at least 50 percent; or

- Maintain a standing vegetative cover (i.e., vegetation that is attached (rooted) with a predominant vertical orientation) that is equal to or greater than 30 percent; or
- Maintain a standing vegetative cover (i.e., vegetation that is attached (rooted) with a predominant vertical orientation) that is equal to or greater than 10 percent and where the threshold friction velocity is equal to or greater than 43 cm/second when corrected for non-erodible elements; or
- Maintain a percent cover that is equal to or greater than 10 percent for non-erodible elements.

**Surface Gravel, Recycled Asphalt, Or Other Suitable Material:** If you choose to “apply and maintain surface gravel, recycled asphalt, or other suitable material” as a control measure for unpaved haul/access roads, you must comply with the standards in Rule 310, Subsection 302.2:

- Do not allow visible dust emissions to exceed 20 percent opacity and either do not allow silt loading to be equal to or greater than 0.33 oz/ft<sup>2</sup> or do not allow silt content to exceed 6 percent.

If you choose to “Apply and maintain surface gravel, recycled asphalt, or other suitable material” as a control measure for unpaved parking lots, you must comply with the standards in Rule 310, Subsection 302.1:

Do not allow visible fugitive dust emissions to exceed 20 percent opacity and either do not allow silt loading to be equal to or greater than 0.33 oz/ft<sup>2</sup> or do not allow silt content to exceed 8 percent.

**An approved Application for an Earthmoving Permit is reproduced on the following pages.**



**PLEASE SUBMIT IN TRIPLICATE**

## Application for an Earthmoving Permit

In order for Maricopa County to process an application for an Earthmoving Permit, all questions must be answered and the appropriate fee must be submitted.

FOR OFFICE USE ONLY	
Dist #	_____
NOV #	_____
Permit #	_____
Date Issued	_____
Fee Paid	_____
Approved By	_____
PU	_____ Mail _____

### Section 1 – Applicant Information

#### 1. Applicant Must Be One Of The Following.

Check All That Apply:

Property Owner\_\_\_\_Developer\_\_\_\_General/Prime Contractor\_\_\_\_Lessee\_\_\_\_

#### 2. Legal Business Name: \_\_\_\_\_

Applicant Address: \_\_\_\_\_

City/State/Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax #: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

#### 3. Property Owner/Developer, If Not Applicant: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax #: \_\_\_\_\_

Contact Person: \_\_\_\_\_

#### 4. Primary Project Contact: \_\_\_\_\_

Title: \_\_\_\_\_ Company Name: \_\_\_\_\_

Pager #: \_\_\_\_\_ Mobile #: \_\_\_\_\_ On-Site #: \_\_\_\_\_

#### 5. Signature of a Responsible Official of the Applicant:

I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in the Application For An Earthmoving Permit, including Section 1-Applicant Information, Section 2-Project Information-Drawing, and Section 3-Dust Control Plan, are true, accurate, and complete.

**A Responsible Official of the Applicant is the person who will be contacted or named in any enforcement action initiated by the Maricopa County Environmental Services Department or the Office of the Maricopa County Attorney.**

Signature: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_

## Section 2 – Project Information-Drawing

**6. Type Of Project. Check All That Apply.**

Residential \_\_\_\_\_ Commercial/Industrial \_\_\_\_\_ Road Work \_\_\_\_\_ Temporary Storage/Yard \_\_\_\_\_  
Trenching \_\_\_\_\_ Site Preparation/Land Development \_\_\_\_\_ Weed Control \_\_\_\_\_ Demolition \_\_\_\_\_

**7. Project Street Address:** \_\_\_\_\_ **City:** \_\_\_\_\_

**8. Nearest Major Intersection:** \_\_\_\_\_

**9. Legal Description (From Phoenix Metropolitan Map Book):**

Township: \_\_\_\_\_ Range: \_\_\_\_\_ Section: \_\_\_\_\_

**10. Size Of Area, In Acres, That Will Be Disturbed During The Duration Of This Permit, Including Staging And Stockpile Areas:** \_\_\_\_\_

**11. Project Start Date:** \_\_\_\_\_

**12. Does The Project Include Renovation Or Demolition Activities? Yes \_\_\_\_\_ No \_\_\_\_\_**  
**Renovation Or Demolition Activities:** All facilities scheduled for renovation or demolition must be inspected by a certified Asbestos Hazard Emergency Response Act (AHERA) accredited asbestos building inspector. You must keep a copy of any reports of inspections, including laboratory test results of samples collected, for 2 years.

**NESHAP** stands for national emission standards for hazardous air pollutants. National emission standards for hazardous air pollutants are described in 40 Code Of Federal Regulations (CFR) Part 61 and Part 63 (1998). If your facility is scheduled for renovation or demolition and is subject to the requirements of these Federal regulations, you must attach, to your Application For An Earthmoving Permit, a copy of the 10-day NESHAP notification.

Is Asbestos Present? \_\_\_\_\_

AHERA Determination Made By: \_\_\_\_\_ Date: \_\_\_\_\_

10-Day NESHAP Notification Submittal Date (Attach Copy Of 10-Day NESHAP Notification): \_\_\_\_\_

Renovation Or Demolition Start Date: \_\_\_\_\_

**An Earthmoving Permit will not be issued, unless a drawing is submitted. Attach a separate page (at least 8 ½" x 11") with a drawing showing all of the following elements:**

- Entire project site boundaries
- Acres to be disturbed with linear dimensions
- Nearest public roads
- North arrow
- Planned exit locations onto paved public roadways

## Section 3 – Dust Control Plan

- Put a check (☐) in the box in front of all the following sources of fugitive dust that you anticipate from your project.
- Write the letters “NA” in the box in front of all the following sources of fugitive dust that you do not anticipate implementing during your project.
- Unless already pre-designated, write the letter “P”, for primary control measures that you will implement during your project, on the line in front of at least one of the listed control measures or work practices, under each checked box/source of fugitive dust. The control measures pre-designated with the letter “P” are required to be implemented.
- Write the letter “C”, for contingency control measures that you will implement during your project, on the line in front of at least one of the listed control measures or work practices, under each checked box/source of fugitive dust.

### ☐ Unpaved Haul/Access Roads:

- ☐ Limit vehicle speed to 15 miles per hour or less and limit vehicular trips to no more than 20 per day. If this is chosen as the primary control measure, indicate number of vehicles traveled on haul roads: \_\_\_\_\_
- ☐ Apply water at a frequency and intensity to comply with Subsection 302.2 in Rule 310 (See Guidance-“Water”) Water Availability: \_\_\_\_\_  
Water Application: \_\_\_\_\_
- ☐ Pave
- ☐ Apply and maintain surface gravel, recycled asphalt, or other suitable material so that the area meets the silt loading and silt content limits of Subsection 302.2 in Rule 310 (See Guidance-“Surface Gravel, Recycled Asphalt, Or Other SuitableMaterial”)
- ☐ Apply and maintain dust suppressant(s) other than water using \_\_\_\_\_ at a frequency of \_\_\_\_\_ and an intensity of \_\_\_\_\_ (See Guidance-“Dust Suppressants”)
- ☐ Other: \_\_\_\_\_

### ☐ Disturbed Surface Areas – Before Dust Generating Operations Occur:

- ☐ Pre-water site to the depth of cuts (See Guidance-“Water”) Water Availability: \_\_\_\_\_  
Water Application: \_\_\_\_\_
- ☐ Phase work to reduce the amount of disturbed surface area at any one time. Describe major project phases (See Guidance-“Describing Major Project Phases”)  
\_\_\_\_\_
- ☐ Other: \_\_\_\_\_

### ☐ Disturbed Surface Areas – During Dust Generating Operations:

- ☐ Apply water (See Guidance-“Water”) Water Availability: \_\_\_\_\_  
Water Application: \_\_\_\_\_
- ☐ Apply and maintain dust suppressant(s) other than water using \_\_\_\_\_ at a frequency of \_\_\_\_\_ and an intensity of \_\_\_\_\_ (See Guidance-“Dust Suppressants”)
- ☐ Construct fences or 3 foot - 5 foot high wind barriers with 50% or less porosity (in combination with one of the above) Show locations on drawing in Section 2.
- ☐ Cease operations (as a contingency control measure only)
- ☐ Other: \_\_\_\_\_

☐ **Disturbed Surface Areas – Temporary Stabilization**  
**Including Weekends, After Work Hours, Holidays,**  
**And Periods Up-To 8 Months:**

- ☐ Apply water (See Guidance-“Water”) or other dust suppressant (See Guidance-“Dust Suppressants”) in sufficient quantity and frequency to establish and maintain a visible crust.  
Water Availability: \_\_\_\_\_  
Water Application: \_\_\_\_\_
- ☐ Establish vegetative ground cover that complies with Subsection 302.3 in Rule 310 (See Guidance-“Vegetative Ground Cover”)  
Describe vegetative ground cover: \_\_\_\_\_
- ☐ Restrict vehicular access in combination with one of the above
- ☐ Other: \_\_\_\_\_

☐ **Disturbed Surface Areas – Permanent Stabilization**  
**Required Within 8 Months Of Ceasing Dust Generating Operations:**

- ☐ Restore area such that the vegetative ground cover and soil characteristics are similar to adjacent or nearby undisturbed native conditions
- ☐ Establish vegetative ground cover that complies with Subsection 302.3 in Rule 310 (See Guidance-“Vegetative Ground Cover”)  
Describe vegetative ground cover: \_\_\_\_\_
- ☐ Pave or apply gravel
- ☐ Apply and maintain dust suppressant(s) other than water using \_\_\_\_\_ at a frequency of \_\_\_\_\_ and intensity of \_\_\_\_\_ (See Guidance-“Dust Suppressants”)
- ☐ Other: \_\_\_\_\_

☐ **Trackout From Work Sites**  
**With 5 Acres Or More Of Disturbed Surface Area Or With 100 Cubic Yards Or**  
**More Of Bulk Material Hauled On Or Off Site Per Day:**

- ☐ Install a grizzly or wheel wash system at all access points
- ☐ At all access points, install a gravel pad at least 30 feet wide, 50 feet long, and 6 inches deep
- ☐ Pave starting from the point of intersection with a paved public roadway and extending for a centerline distance of at least 100 feet and a width of at least 20 feet
- ☐ Other: \_\_\_\_\_

☐ **Spillage, Carry-Out, Erosion, And/Or Trackout:**

**If Extending More Than 50 Feet Along A Paved Public Roadway,**  
**Implement IMMEDIATELY:**

- ☐ Operate a street sweeper or wet broom with sufficient water, if applicable, at the speed recommended by the manufacturer
- ☐ Manually sweep-up deposits
- ☐ Other (describe in detail): \_\_\_\_\_

**If Extending Less Than 50 Feet Along A Paved Public Roadway,**  
**Implement NO LATER THAN THE END OF THE WORK DAY:**

- ☐ Operate a street sweeper or wet broom with sufficient water, if applicable, at the speed recommended by the manufacturer
- ☐ Manually sweep-up deposits
- ☐ Other (describe in detail): \_\_\_\_\_

**☐ Vehicle Use In Open Areas:**

- ☐ Restrict trespass by installing signs
- ☐ Install physical barriers such as curbs, fences, gates, posts, signs, shrubs or trees to prevent access
- ☐ Other: \_\_\_\_\_

**☐ Unpaved Parking Lots:**

- ☐ Apply water at a frequency and intensity to comply with Subsection 302.1 in Rule 310 (See Guidance-"Water")  
Water Availability: \_\_\_\_\_  
Water Application: \_\_\_\_\_
- ☐ Apply and maintain gravel, recycled asphalt, or other suitable material such that the area meets the silt loading and silt content limits of Subsection 302.1 in Rule 310 (See Guidance-"Surface Gravel, Recycled Asphalt, Or Other Suitable Material")
- ☐ Pave
- ☐ Apply and maintain dust suppressant(s) other than water using \_\_\_\_\_ at a frequency of \_\_\_\_\_ and an intensity of \_\_\_\_\_  
(See Guidance-"Dust Suppressants")
- ☐ Other: \_\_\_\_\_

**☐ Bulk Material Handling And Open Storage Piles:**  
(Choose Primary Control Measure And Secondary Control Measure  
For Each Of The Following 2 Situations):

**During Stacking, Loading, And Unloading Operations:**

- ☐ Apply water at a frequency and intensity so as not to exceed 20% opacity (See Guidance-"Water")  
Water Availability: \_\_\_\_\_  
Water Application: \_\_\_\_\_
- ☐ Other (describe in detail): \_\_\_\_\_

**When Not Conducting Stacking, Loading, And Unloading Operations:**

- ☐ Cover open storage piles with tarps, plastic, or other material
- ☐ Apply water to maintain a soil moisture content at a minimum of 12% or 70% of the optimum moisture content for compaction (See Guidance-"Water")  
Water Availability: \_\_\_\_\_  
Water Application: \_\_\_\_\_
- ☐ Apply water as needed to establish and maintain a visible crust (See Guidance-"Water")  
Water Availability: \_\_\_\_\_  
Water Application: \_\_\_\_\_
- ☐ Maintain a threshold friction velocity of at least 100 cm/sec
- ☐ Maintain vegetative cover meeting one of the requirements of Subsection 302.3 in Rule 310 (See Guidance-"VegetativeGround Cover")
- ☐ Construct wind barriers (See Guidance-"Open Storage Piles"). This control measure must be used in combination with at least one of the above control measures, except covering.
- ☐ Other: \_\_\_\_\_

☐ **Bulk Material Hauling On-Site Within The Boundaries Of The Work Site:**

- P** Load all haul trucks such that the freeboard is not less than 3 inches; and  
Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgates; and  
Install a trackout control device that removes particulate matter from tires and the exterior surfaces of haul trucks and/or motor vehicles that traverse the work site
- ☐ Limit vehicular speeds to 15 miles per hour or less while traveling on the work site
- ☐ Apply water to the top of the load (See Guidance-"Water")  
Water Availability: \_\_\_\_\_  
Water Application: \_\_\_\_\_
- ☐ Cover haul trucks with a tarp or other suitable closure
- ☐ Other: \_\_\_\_\_

☐ **Bulk Material Hauling Off-Site Onto Paved Public Roadways:**

- P** Cover haul trucks with a tarp or other suitable closure; and  
Load all haul trucks such that the freeboard is not less than 3 inches; and  
Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgate(s); and  
Before the empty haul truck leaves the site, clean the interior of the cargo compartment or cover the cargo compartment
- ☐ Other: \_\_\_\_\_

☐ **Earthmoving Operations On Disturbed Surface Areas 1 Acre Or Larger:**

- ☐ Apply water, while conducting earthmoving operations (See Guidance-"Water")  
Water Availability: \_\_\_\_\_  
Water Application: \_\_\_\_\_
- ☐ Other: \_\_\_\_\_

☐ **Weed Abatement By Discing Or Blading:**

- P** Pre-water site and apply water, while weed abatement by discing or blading is occurring (See Guidance-"Water")  
Water Availability: \_\_\_\_\_  
Water Application: \_\_\_\_\_
- ☐ Other: \_\_\_\_\_

**Choose At Least One of The Following, As A Primary Control Measure, To Be Implemented Following Weed Abatement By Discing Or Blading:**

- ☐ Pave
- ☐ Apply gravel to establish and maintain either a threshold friction velocity of at least 100 cm/sec or a cover of at least 10% non-erodible elements
- ☐ Apply water (See Guidance-"Water") or other dust suppressant (See Guidance-"Dust Suppressants") to establish and maintain a visible crust  
Water Availability: \_\_\_\_\_  
Water Application: \_\_\_\_\_
- ☐ Establish vegetative ground cover meeting one of the requirements of Subsection 302.3 of Rule 310 (See Guidance-"Vegetative Ground Cover")
- ☐ Other: \_\_\_\_\_



# SAMPLE DAILY RECORDKEEPING LOG FOR RULE 310

**Project Name:** \_\_\_\_\_ **Project Location:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Maricopa County's Rule 310 (Fugitive Dust Sources) requires that you keep a daily log – recording the actual implementation of control measures identified in your Dust Control Plan.

Each time you visually check an area for dust control measure implementation, write the time in the shaded boxes at the top of the log and write a "Y", "N", or "NA", in all of the boxes below your recorded time.

Use the "Comments" column to record other pertinent information. For example, document the opacity of the fugitive dust or describe the corrective actions taken, such as placement of gravel for road cover or trackout control.

**Time (indicate a.m. or p.m.)**

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## 1. Before Dust Generating Operations Occur

A. Pre-watering to depth of cuts?										<b>Comments</b>
B. Pre-watering stockpiled material?										
C. Work phased/Disturbance minimized?										
D. Water truck being operated?										
E. Water truck being filled?										
F. Other (specify in Comments column)										

## 2. During Dust Generating Operations

A. Is visible dust present?										<b>Comments</b>
B. Applying water?										
C. Applying dust suppressant(s) other than water?										
D. Fences or 3' – 5' high wind barriers with 50% porosity intact?										
E. Shut down operations?										
F. Checked control measures before leaving the work site for the day?										
G. Other (specify in Comments column)										

## 3. Unpaved Haul/Access Roads

A. Is visible dust present?										<b>Comments</b>
B. Observed less than 20 vehicles travelling less than 15 miles per hour?										
C. Is road visibly moist?										
D. Is road covered with gravel, recycled asphalt, or other suitable material?										
E. Applying dust suppressant(s) other than water?										
F. Other (specify in Comments column)										

## 4. Loading, Unloading, And Storage Piles

A. Is visible dust present?										<b>Comments</b>
B. Pre-watering material?										
C. Water being applied during loading and unloading?										
D. Other (specify in Comments column)										

## 5. Trackout/Access Points

A. Is trackout control device intact?										<b>Comments</b>
B. Cleaned-up trackout?										
C. Other (specify in Comments column)										

## 6. Temporary Site Stabilization

A. Applying water?										<b>Comments</b>
B. Applying dust suppressant(s) other than water?										
C. Other (specify in Comments column)										

**Total Number Of Gallons Applied:** \_\_\_\_\_ **Responsible Person's Signature And Title:** \_\_\_\_\_

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## SOURCES OF ADDITIONAL INFORMATION

### BLUE SKIES PROGRAM COORDINATOR

At the time this document was published, the duties of the Arizona Blue Skies Coordinator are being handled on an interim basis by ADOT personnel at (602) 712-7487. The Coordinator responds to inquiries from members of the construction industry and others concerning the availability of Dust Control Classes and disseminates information regarding dust control certification.

Certified Dust Control Instructors may obtain copies of toolkits and instructional materials for use in conducting dust control classes from the Coordinator.

The Coordinator also has dust control resources available for use by schools and by volunteer organizations including copies of this Guide, program brochures, and videos.

### BLUE SKIES WEB SITE

Be sure to visit the interim Web site at <http://tpd.az.gov/air/blueskies.htm>. The Web site contains updated information about dust control, including documents that can be downloaded and reproduced. Training materials may also be ordered on-line.

## OTHER SOURCES OF INFORMATION

### Environmental Protection Agency

1200 Pennsylvania Avenue, NW  
Washington, DC, 20460.  
<http://www.epa.gov/>

### Arizona Department of Environmental Quality

Phoenix Main Office  
3033 N. Central Ave.  
Phoenix, AZ 85012  
(602) 207-2300  
Toll Free in Arizona:  
(800) 234-5677

Northern Regional Office  
1515 E. Cedar Ave., Suite F  
Flagstaff, AZ 86004  
(928) 779-0313

Southern Regional Office  
400 W. Congress, Suite 433  
Tucson, AZ 85701  
(520) 628-6733

### Maricopa County Environmental Services Department

602-506-6623  
<http://www.maricopa.gov/envsvc/Default.asp>

### Dust Devil Academy

<http://www.maricopa.gov/sbeap/basepage.htm>

### Pima County Department of Environmental Quality

<http://www.airinphonow.org/index.asp>